
**Compliance Biology, Inc., "Results of Focused Surveys for Arroyo Toad and
Special-Status Aquatic Reptiles and Amphibians, River Village Project;
Newhall Ranch, Valencia, California" (October 2004; 2004D)**

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**Results of Focused Surveys for Arroyo Toad and
Special-Status Aquatic Reptiles and Amphibians
River Village Project; Newhall Ranch,
Valencia, California**

Prepared for:

Newhall Ranch Company
23823 Valencia Boulevard
Valencia, California 91355

Prepared by:



Compliance Biology, Inc.
1936 N. Croydon Avenue
Camarillo, California 93010

October, 2004

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**Results of Focused Surveys for Arroyo Toad and
Special-Status Aquatic Reptiles and Amphibians
River Village Project; Newhall Ranch
Valencia, California**

The following presents the findings of focused protocol surveys that were conducted to determine the presence/absence of the federally-listed Endangered arroyo toad (*Bufo californicus*) within portions of the Santa Clara River adjacent to the River Village project. This report is intended to provide project specific biological information to Newhall Ranch Company, U.S. Army Corps of Engineers (ACOE) and U.S. Fish and Wildlife Service (FWS) regarding results of focused surveys for arroyo toad and additional special-status amphibians and aquatic reptiles including southwestern pond turtle (*Clemmys marmorata pallida*) and two-striped garter snake (*Thamnophis hammondi*) conducted on the subject site.

INTRODUCTION

The survey reach is located in northwest Los Angeles County (**Figure 1**). The River Village project area that is the subject of this report was included as part of a larger scale protocol survey conducted in potentially suitable habitat in portions of the Santa Clara River and adjacent uplands from approximately 1200 feet east (upstream) from the confluence with Castaic Creek, west (downstream) approximately seven (7) miles to the Las Brisas Bridge crossing in eastern Ventura County. The area surveyed on and adjacent to the River Village project site is illustrated in **Figure 2**. The survey area is situated within the Newhall, California U.S. Geological Survey (USGS) 7.5-minute quadrangle map.

General Arroyo Toad Background

The arroyo toad is a small (generally 2 to 3 inches in snout to vent length), light greenish gray or tan toad with warty skin and dark spots. Its underside is white or buff colored without spots. A light-colored stripe crosses the head and eyelids, and a light area usually occurs on each sacral hump and in the middle of the back (FWS, 1994). The arroyo toad does not have the prominent white dorsal stripe characteristic of the commonly occurring western toad (*Bufo boreas*).

The arroyo toad was listed as a federally Endangered species by the FWS on December 16, 1994 (50 CFR Part 17). The arroyo toad is also considered a Species of Special Concern by the California Department of Fish and Game (DFG) and a Protected Amphibian under the state Fish and Game Code. A federal Recovery Plan was prepared in 1999 and critical habitat was defined in February 2001. This critical

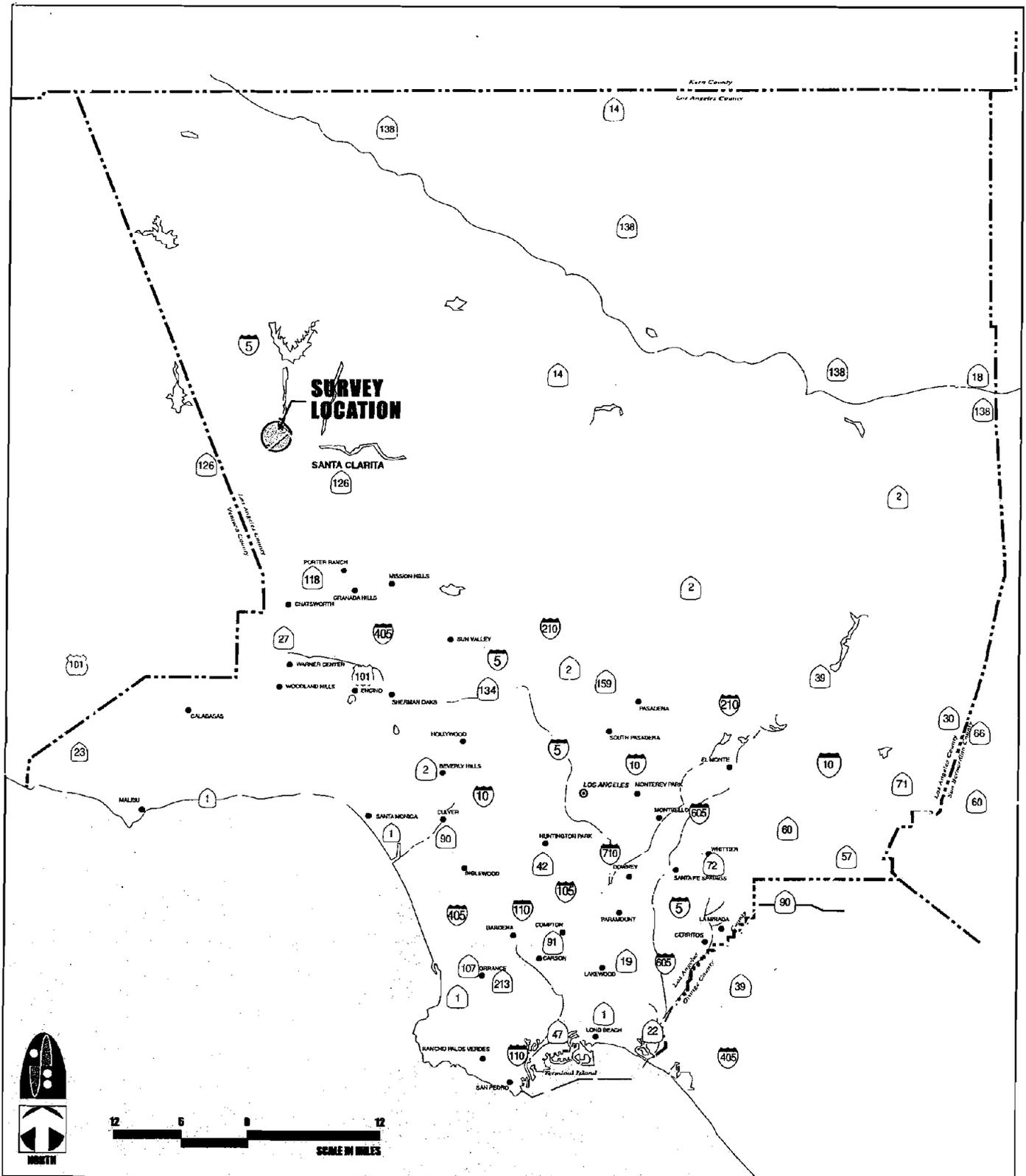


figure 1
Regional Location



ARROYO TOAD REPORT

L E G E N D

-  Arroyo Toad Survey Reach
-  Newhall Ranch
Specific Plan Boundary

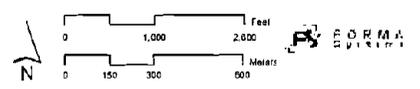
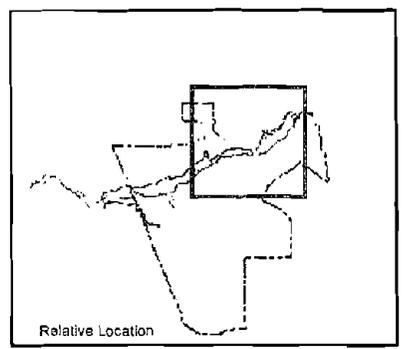


Figure 2
SURVEY REACH

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habitat designation was rescinded by court order based on lack of economic impact considerations and has since been re-proposed in early 2004. The eastern portion of the survey reach lies within the newly proposed critical habitat area. Much of the information in the federal listing documents (FWS 1994, 1999, 2001) regarding the biology of the arroyo toad was derived from extensive research conducted by Dr. Samuel Sweet of the University of California, Santa Barbara (Sweet 1992, 1993). Additional detail is included in the Recovery Plan (FWS 1999) and a radio telemetry study conducted by Ruben Ramirez (2000).

Although considered a subspecies by some taxonomists, the nearest population of the arroyo toad's closest relatives is the Colorado River basin. Based on the separation from the other subspecies and results from recent genetic tests, it has been recommended that the arroyo toad be considered a separate species (FWS 2001). For this reason, many biologists refer to arroyo toad as *Bufo californicus* and it is therefore, considered as such in this report.

Arroyo toad historically ranged from the upper Salinas River, south through the Santa Ynez, Santa Clara, and Los Angeles River basins and the coastal drainages of Orange, Riverside, and San Diego Counties to the Arroyo San Simeon system into Baja California, Mexico (FWS 1999). As of 1994 arroyo toad was known from only 22 populations (Ramirez 2000). Many areas that may have historically contained suitable breeding habitat for arroyo toad have been degraded by dam and flood control construction, off-road recreation, urbanization, mining, and introduced predators (FWS, 1999). This species is currently found in relatively small, isolated populations. Most remaining populations of arroyo toad occur on privately owned lands. Less than 50 percent of the known extant populations of arroyo toad occur on the Los Padres, San Bernardino, and Cleveland National Forests (FWS, 1994).

Overview of Arroyo Toad Habitat Characteristics

In general, arroyo toad requires habitat features that occur in drainages of a narrow, intermediate range of size that have a sufficient number of tributaries to produce an amount of alluvium necessary to decrease the gradient and form suitable breeding pools (Sweet 1992). Dr. Sweet's research in the Los Padres National Forest also suggests that "The late breeding season and long periods of dependence on surface water of arroyo toad larvae and juveniles restrict them from occurring in areas where the riverbed dries out by early summer (1992)."

Habitats utilized by arroyo toad include both breeding sites and over-wintering sites. Suitable breeding habitat features include shallow pools with a minimum of vegetation along one or both margins during the breeding season (Sweet 1992). Preferred pools occur adjacent to sand bars and sandy, stream terraces with vegetation that is mature enough to stabilize the terrace soils during all but the largest storm events. Eggs are deposited and larvae develop in shallow pools with minimal current, little or no emergent vegetation, and a sand or pea gravel substrate overlain with silt (FWS, 1994). As described by Sweet (1992), the following characteristics are relatively consistent with documented breeding pools: proximity to sandy terrace habitat; minimal current; the majority of the pool is less than 30 cm deep; substrate is sand, gravel, or pebbles; a gently sloping shoreline, or central sand bar; and bordering vegetation is low or set back such that most of the pool is open to the sky.

After metamorphosis (usually in June and July), juvenile toads commonly remain on the bordering gravel bars until the natal pool dries up (often between 3 and 8 weeks) (Sweet 1992). Juvenile and adult toads feed on insects on sandy stream terraces with a sparse understory at ground level and a light to moderate overstory of riparian trees, including cottonwoods (*Populus* sp.), oaks (*Quercus* sp.), or willows (*Salix* sp.). Adult toads excavate shallow burrows on the terraces for shelter during the day when the surface is still damp or for longer intervals during the dry season (FWS, 1994).

Adult arroyo toads extensively utilize terraces and marginal zones (areas of mixed sediments that occur between the stream channel and mature riparian vegetation zone) outside the breeding season "and seem to have a critical dependence on terrace habitat in the late fall and winter months, when they are generally inactive" (Sweet 1992). Terraces utilized occur in the vicinity of breeding sites and are commonly characterized by sparse to moderate vegetation including mule fat (*Baccharis salicifolia*), California sycamore (*Platanus racemosa*), cottonwood, willow, and coast live oak (*Q. agrifolia*). The understory in these habitats may be bare or consist of scattered grasses herbs, and leaf litter (FWS 2001a). In order for any of these habitats to be suitable for arroyo toad use, several areas of open friable sand must be present where they can burrow (FWS 2001).

Adult arroyo toads have also been documented in upland habitats outside of a stream channel, primarily outside of the breeding season. These 'uplands' are generally associated with accessible upper flood terraces that occur in the vicinity of breeding habitat. Upland habitats utilized by over-wintering arroyo toad include alluvial scrub, coastal sage scrub, chaparral, grassland and oak woodland (FWS 2001). Soils are also important in these over-wintering habitats. Though individual arroyo toads have been documented from small mammal burrows, the majority of data suggests that they prefer sandy soils in

which to burrow (Bloom, pers. com.). Data collected by Ramirez (2000) suggest that arroyo toad may move burrow sites to follow soil moisture levels. Some arroyo toads have been documented to move back into the stream channel itself during the driest part of the season.

There is some variation in the timing of arroyo toad breeding based upon location and environmental conditions, but it generally takes place between February and late June. In the region that includes the subject survey area, breeding generally occurs between April and June. Adult males will select a breeding site generally based on the criteria described above, but may call from a variety of positions within the pools including the margins, edges of central bars, submerged bars, or occasionally from the surface of dense submerged vegetation (Sweet 1992). During courtship, males vocalize a high trill usually lasting 8 to 10 seconds (FWS 1999).

Critical Habitat Designation

Critical habitat is defined by the USFWS as: (1) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Endangered Species Act of 1973 as amended, on which are found those physical or biological features (a) essential to the conservation of the species and (b) that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the Act is no longer necessary (FWS, 2004).

Criteria used by FWS to select critical habitat includes evaluation of an area to determine the presence of 'primary constituent elements,' as defined in the Proposed Rule (FWS 2004). These elements include physical and biological features that are essential to the conservation of the species, and that may require special management and protection (FWS 2004). Primary constituent elements for the arroyo toad include aquatic breeding habitats and non-breeding upland habitats. These elements are generally outlined by Sweet (1992, 1993) and were expanded and are specifically defined in the Proposed Rule including:

- Space for Individual and Population Growth and for Normal Behavior. "Essential habitat for the arroyo toad is created and maintained by the fluctuating hydrogeological, geological, and ecological processes operating in riparian ecosystems and the adjacent uplands. Periodic flooding that modifies stream channels, redistributes channel sediments, and alters pool location and form, coupled with

upper terrace stabilization by vegetation, is required to keep a stream segment suitable for all life stages of the arroyo toad." "Eggs and tadpoles require aquatic habitat..." "Riparian habitats used by subadults and adults for foraging and burrowing include sand bars, alluvial terraces, and streamside benches that lack vegetation, or are sparsely to moderately vegetated. Upland habitats used by arroyo toads during both the breeding and nonbreeding seasons include alluvial scrub, coastal sage scrub, chaparral..., grassland, and oak woodland. Arroyo toads have also been found in agricultural fields, but these lands may constitute sinks (areas where mortality rates are higher than reproduction rates) over the long term due to tilling, pesticide and fertilizer applications, and heavy equipment use." "The substrate in habitats preferred by arroyo toads consists primarily of sand, fine gravel, or pliable soils, with varying amounts of large gravel, cobble, and boulders. Areas that are damp and have less than 10 percent vegetation cover provide the best conditions for juvenile survival and rapid growth. Arroyo toads must be able to move between the stream and upland foraging sites, as well as up and down the stream corridor." (FWS 2004)

- Food, Water, and Physiological Requirements. Arroyo toad tadpoles eat microscopic algae, bacteria, and protozoans sucked up from the spaces among pebbles, gravel, and sand or abraded from stones. Juveniles and adults feed on insects, but specialize on ants. When foraging, arroyo toads are often found around the driplines of oak trees. These areas often lack vegetation, yet have sufficient levels of prey. When active at night, toads often can be observed near ant trails feeding on ants, beetles, and other prey." (FWS 2004)
- Cover or Shelter. During the day and other periods of inactivity, arroyo toads seek shelter by burrowing into the sand. Thus, areas of sandy or friable (readily crumbled) soils are necessary to burrow, but these soils can be interspersed with gravel or cobble deposits. Arroyo toads may also seek temporary shelter under rocks or debris and have been found in mammal burrows on occasion. Upland sites with extremely compact soils can also be used for foraging and dispersal." (FWS 2004)
- Sites for Breeding, Reproduction and Rearing of Offspring. Arroyo toads "favor shallow pools and open sand and gravel channels along low-gradient (Typically less than 6 percent) reaches of medium-to-large-sized streams. These streams can have either intermittent or perennial streamflow and typically experience periodic flooding that scours vegetation and replenishes fine sediments." "Breeding pools must persist long enough for the completion of larval development (at least in most years), which is generally March through June, depending on location and weather." "Peak metamorphosis occurs during June and July in the northern part of the toad's range, and from late April through June further south, although it may be later, particularly at higher elevations." (FWS 2004)
- Disturbance, Protection, and the Historical Geographical Distributions. Pursuant to federal regulations the FWS is required to identify the known physical and biological features (PCEs) essential to the conservation of the arroyo toad, together with a description of any critical habitat that

is proposed. "The PCEs determined essential to the conservation of arroyo toad include, but are not limited to:

1. Rivers or streams with hydrologic regimes that supply water to provide space, food, and cover needed to sustain eggs, tadpoles, metamorphosing juveniles, and adult breeding toads. Specifically, the conditions necessary to allow for successful reproduction of arroyo toads are:
 - a. breeding pools with areas less than 12 in (30cm) deep;
 - b. areas of flowing water with current velocities less than 1.3 ft per second; and
 - c. surface water that lasts for a minimum length of 2 months in most years, *i.e.*, a sufficient wet period in the spring months to allow arroyo toad larvae to hatch, mature, and metamorphose.
2. Low-gradient stream segments (typically less than 6 percent) with sandy or fine gravel substrates that support the formation of shallow pools and sparsely vegetated sand and gravel bars for breeding and rearing of tadpoles and juveniles.
3. A natural flooding regime, or one sufficiently corresponding to a natural regime, that will periodically scour riparian vegetation, rework stream channels and terraces, and redistribute sands and sediments, such that breeding pools and terrace habitats with scattered vegetation are maintained.
4. Riparian and adjacent upland habitats (particularly alluvial streamside terraces and adjacent valley bottomlands that include areas of loose soil where toads can burrow underground) to provide foraging and living areas for subadult and adult arroyo toads.
5. Stream channels and adjacent upland habitats that allow for migration to foraging areas, overwintering sites, dispersal between populations, and recolonization of areas that contain suitable habitat."

It should be noted, and is discussed in the Proposed Rule that arroyo toads are not distributed uniformly throughout the designated critical habitat areas and that breeding and upland habitats are patchily distributed (FWS 2004). The nature of breeding habitats is dynamic and may shift in structure and location from year to year depending upon seasonal rainfall and storm cycles. Similarly upland habitats, though more stable, can be affected by fire, storms, and other natural events.

In order to preserve as much of the ecological and geographic diversity of arroyo toad distribution, three recovery units were selected. These are referred to as the Northern, Southern, and Desert recovery units. These units are based on ecological and geographic separation and the known and historic range of the species. The FWS' goal is to stabilize and expand the populations in these units in order to preserve the species' genetic diversity as well as the environments in which the species is found (FWS 1999). The recovery units are based on the U.S. Geological Survey hydrologic subregion and accounting unit boundaries as delineated on the Hydrologic Unit Map. The objective of the recovery plan is to initially

recover the arroyo toad sufficiently to warrant reclassification to Threatened status and finally to recover the species sufficiently to warrant delisting altogether (FWS 2001).

The FWS has identified 23 critical habitat units for the recovery of the arroyo toad. The unit nearest to Newhall Ranch is Unit 6, the Upper Santa Clara River Basin, which consists of portions of Castaic and San Francisquito Creeks, the Santa Clara River, and adjacent uplands, encompassing approximately 7,398 acres. Arroyo toads have been recorded at the following locations within critical habitat Unit 6, upstream of the subject Newhall Ranch survey area.

- Upper Castaic Creek (SubUnit 6a) –above the reservoir – occurrences documented the U.S. Forest Service above the Castaic Lake reservoir (FWS 2004)
- Santa Clara River (SubUnit 6b) – 2003 communication to FWS by Ruben Ramirez of Cadre Environmental reported “...recent observations of arroyo toads and eggs” in the Santa Clara River in the vicinity of the San Francisquito Creek confluence (FWS 2004).
- Santa Clara River – 2001, protocol surveys by Impact Sciences found a single adult arroyo toad near the confluence of San Francisquito Creek.
- Santa Clara River – 2001, Ms. Nancy Sandburg reports observance of 4 adult arroyo toads near the confluence of San Francisquito Creek to FWS.
- Upper San Francisquito Creek – Calling male arroyo toads heard in 1997 near the old St. Francis Dam (FWS 2004).

The FWS (2004) considers the Santa Clara River to be essential as a dispersal corridor for arroyo toads between Castaic Creek and upper San Francisquito Creek. FWS (2001a) believes the stability of the Upper Santa Clara River basin arroyo toad population will increase substantially with appropriate management of non-native plants and animals and habitat rehabilitation. These activities are already underway in the lower San Francisquito Creek area and include removal of giant cane and tamarisk from the streambed and supplemental plantings of willows and cottonwoods. Approximately two miles of the eastern portion of the River Village survey reach occurs within the proposed Critical Habitat Unit 6.

METHODOLOGY

Previous Studies In and Near the Newhall Ranch Project Area

Documentation pertinent to the biological resources in the vicinity of the site was reviewed and analyzed. Information reviewed included: (1) the Federal Register listing package for the federally listed Endangered arroyo toad potentially occurring on the project site; (2) literature pertaining to habitat requirements of sensitive species potentially occurring on the project site; (3) the California Natural Diversity Data Base (CNDDDB 2004) information regarding special-status species potentially occurring on the project site for the Newhall, Val Verde, and Mint Canyon USGS 7.5-minute quadrangle maps, and (4) previous surveys for aquatic resources in the Newhall Ranch project area. A summary of the results are provided below.

- Federal Register – The December 16, 1994 Determination of Endangered Status for the Arroyo Southwestern Toad (50 CFG Part 17, RIN 1018-AB97) cited arroyo toad locations from Sespe and Piru Creeks and the Los Padres National Forest (FWS 1994). There were no records of any arroyo toad in the Newhall Ranch area mentioned in this report.
- The April 2004 Proposed Critical Habitat for the Arroyo Toad stated that arroyo toads have been reported from Castaic Creek above the reservoir, from San Francisquito Creek between the southern end of Section 34 and Bee Canyon, and in the Santa Clara river in the vicinity of the San Francisquito Creek confluence. There were no records of any arroyo toad in the Newhall Ranch area mentioned in this report (FWS 2004).
- Rare Plant and Animal Survey, Santa Clarita Water District Service Area (San Marino Environmental Associates, 1995) – Non-protocol reconnaissance surveys were conducted in the NMRP area, but the species was not observed. However, the author states that it could be present in low numbers.
- Sensitive Aquatic Species Survey for Newhall Land & Farming Company (San Marino Environmental Associates, 1995) – Non-protocol reconnaissance surveys were conducted of the Santa Clara River from Bouquet Canyon to Castaic Creek, and along San Francisquito. None were found.
- Newhall Ranch Biota Report (RECON, 1995) – Non-protocol surveys were conducted on the Santa Clara River for the Newhall Ranch Specific Plan EIR prepared by Los Angeles County. None was

observed during the surveys, but the report states there is a moderate potential for their occurrence on the main stem in Newhall Ranch.

- Survey for Arroyo Toad for Newhall Ranch (RECON, 1999) – Protocol surveys were conducted, but no toads were observed. However, appropriate habitat is present.
- Biota Report for SEATAC for West and East Creek Projects on San Francisquito Creek (Impact Sciences, 1998) – Report states that the species may travel periodically to project area from upstream population; cited Frank Hovore’s report of anuran (frog or toad) eggs observed in the project area, but washed away by stream flows before an accurate identification could be made.
- Surveys on Tesoro del Valle (White and Leatherman Bioservices, 2001) – Arroyo toad habitat assessment for the Tesoro del Valle project located on San Francisquito Creek, immediately north of the NRMP project area. The assessment focused on the Tesoro project area, as well as approximately 9 linear miles of San Francisquito Creek habitat, north from its confluence with the Santa Clara River. The evaluation was based on the presence or absence of primary constituent habitat elements. The report concluded that the most critical primary constituent element is a hydrologic regime that supports habitat for breeding adults, eggs, tadpoles, and metamorphosing juveniles (Leatherman, 2000). As such, it was determined that the best potential habitat for the arroyo toad in San Francisquito Creek occurs north of the Tesoro del Valle project site on the National Forest. The report further stated that though the project area and other portions of San Francisquito Creek south of U.S. Forest Service lands supported many of the primary constituent elements, the hydrologic regime was not present. Therefore, it was concluded that this portion of San Francisquito Creek would only be useful for dispersing individuals if they were to occur in the immediate area.
- Sandburg Reconnaissance Surveys, NRMP project area – In April 2001, Ms. Nancy Sandburg conducted surveys in the Santa Clara River on Newhall Land and Farming property. In notes sent to the FWS, Ms. Sandburg reported observations of a total of four adult toads from several survey efforts. Each was detected in the Santa Clara River in the near vicinity of the San Francisquito Creek confluence. Ms. Sandburg’s notes did not include detection of any vocalizations or any other breeding behavior.
- Sandburg Reconnaissance Surveys, Soledad Canyon area – In May 2001, Ms. Sandburg conducted arroyo toad surveys in the Santa Clara River in the Soledad Canyon area. Arroyo toad tadpoles

(three separate cohorts) were reported from three separate drying pools within the project reach which includes the portion of the Santa Clara River occurring between the River's End vacation park and the proposed Transit Mix Concrete Company mine. This site is situated approximately 9 miles east of the NRMP. Ms. Sandburg noted that there was a potential for some of the tadpoles to be lost before metamorphosis due to the rapid evaporation of the remaining water in the pools (Sandburg 2001).

- Impact Sciences, Inc. protocol surveys in NRMP area, portions of Castaic Creek, San Francisquito Creek from the Santa Clara River to the Copper Hill Bridge, and the Santa Clara River east from the NRMP area to approximately 500 meters past the Los Angeles Aqueduct crossing, including portions of South Fork Santa Clara River and Bouquet Creek – In spring 2001 intensive surveys following FWS recommended survey protocol were conducted in the described area. A single arroyo toad was observed in the Santa Clara River adjacent to the San Francisquito Creek confluence.
- Results of Focused Surveys for Arroyo Toad and Special-status Aquatic Reptiles and Amphibians; Newhall Ranch (Impact Sciences, Inc. 2002). Protocol surveys were conducted during the 2001 survey season in the Santa Clara River from near the confluence with Castaic Creek, west (downstream) to the Los Angeles-Ventura County boundary. No arroyo toads were observed or detected.

Survey Scope and Methods

FWS developed a survey protocol to determine the presence or absence of arroyo toad (FWS 2001; see **Appendix A**). The protocol requires six focused surveys be conducted in suitable habitat between March 15 and July 1 with at least seven days between surveys. The surveys were timed such that at least one survey is conducted during the months of April, May, and June. Protocol surveys include both daytime and nighttime components conducted within the same 24-hour period. Surveys are not to be conducted during adverse weather conditions because environmental conditions such as low temperatures, high winds, and rain may affect the behavior of arroyo toad. Full moon phases are also avoided.

Compliance Biology, Inc. conducted protocol surveys for arroyo toad beginning March 19, 2004 within the River Village project reach. David Crawford, principal biologist, conducted all surveys and was accompanied by Tim Rademaker, a current Environmental Science student at CSUCI. Mr. Crawford is a

FWS authorized surveyor for arroyo toad and permission was granted from the FWS Ventura field office to conduct these specific surveys and utilize Mr. Rademaker as an assistant.

The primary purpose of the survey effort was to determine presence/absence of arroyo toad within the project area. As such, pursuant to protocol, if and when any arroyo toads were observed or detected, surveys would cease in those specific areas. Surveys would be continued in areas adjacent to observed toads in order to accurately map the specific locations of all occupied areas within the entire survey reach.

Pursuant to protocol methodologies, a series of six day and night surveys (conducted within the same 24-hour period) were conducted at least seven days apart. Additionally, at least one survey was conducted in April, May, and June as directed in the protocol guidelines. Survey dates for the River Village survey reach were March 19, April 23, May 7, May 21, June 11, and June 25, 2004. The entire survey reach was systematically surveyed by at least two authorized surveyors at a time. Daytime surveys consisted of searching for suitable breeding pools to determine if egg masses, tadpoles, or metamorphosing juveniles were present, and for the purpose of identifying the most likely calling sites for any adult males that were potentially in the area. All nighttime surveys were conducted when air temperatures were at least 55 degrees Fahrenheit when they were initiated. Periods of full moon phases were generally avoided. Surveys were conducted each night from about 2030 to 2330 hours.

Weather conditions were generally calm and clear throughout the survey effort with a few nights of relatively overcast conditions. The project area was surveyed by walking slowly and carefully along stream banks or within the stream itself when necessary. As with the daytime surveys, every precaution was taken not to disturb or create silt deposits within potential breeding pools, and care was taken not to disturb or injure potentially occurring arroyo toad adults, juveniles, tadpoles, or egg masses. Periodic stops were taken to listen for calling males at 15-minute intervals or as appropriate depending upon individual zone conditions. Surveys were conducted as quietly as possible to maximize the potential to hear calling arroyo toads. Handheld flashlights and headlamps were utilized to visually locate toads within potential breeding areas and along stream banks. In addition to documenting arroyo toad data, all aquatic herpetofauna observed during both day and night surveys were recorded.

Three additional visits were made to an area known to be occupied by arroyo toad to determine if and when adult males were calling and what stages of development larval tadpoles would be in. The area surveyed was a portion of Castaic Creek that is situated approximately one mile north of the Castaic reservoir on U.S. Forest Service land, near the eastern terminus of Templin Highway.

PROTOCOL SURVEY RESULTS

No arroyo toads were observed or detected in or adjacent to the River Village survey area. Daytime surveys did not reveal the presence of any egg masses or larvae and no juvenile or adult toads were observed or otherwise detected during any of the survey efforts. In addition, no available survey data indicates that the arroyo toad has been recently recorded within or adjacent to the River Village project site.

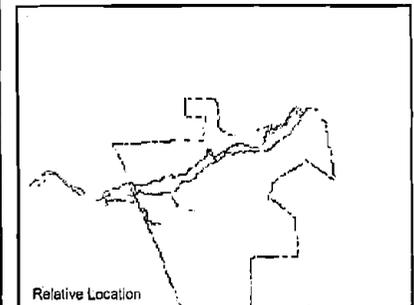
Though no arroyo toads were recorded, other amphibian and aquatic reptile species were detected. All life stages of western toad (*Bufo boreas*), Pacific chorus frog (*Hyla regilla*), and California chorus frog (*Hyla cadaverina*), were recorded. Western toads and Pacific chorus frogs were very common while California chorus frogs were only detected during two of the surveys. An interesting note is that no bullfrogs (*Rana catesbeiana*) were detected during the entire survey effort. However, numerous tadpoles, juvenile and adult forms of the invasive African clawed frog (*Xenopus laevis*) were observed at various points within the survey reach during all but two of the surveys. Several southwestern pond turtles (*Clemmys marmorata pallida*), a California protected species and state species of special concern, were also observed in ponded areas of the river during many of the daytime surveys. Specific locations of pond turtles observed are illustrated on Figure 3. Curiously, no two-stripe garter snakes (*Thamnophis hammondi*) were detected during the survey effort despite their relatively common occurrence during the 2001 surveys conducted by Impact Sciences in this same area. There were no obvious changes to existing conditions in or adjacent to the river that would explain their lack of occurrence.

Most of the habitat covered by protocol surveys within the River Village reach was considered to be of relatively high quality as most or all of the primary constituent elements of arroyo toad habitat were present. Habitats in the survey reach included some densely wooded areas, as well as sparsely vegetated sandbars with gravelly to sandy substrates. Within the more open areas, scattered willow saplings were present as were, small clumps giant cane and non-native tamarisk (*Tamarix* sp.). In some areas, the outer terraces existing along the base of the north and south banks, supported patches of larger cottonwoods and willows, and other areas were more dominated by mule fat. Upland areas on the north side of much of the survey reach adjacent to the proposed River Village site lacked much vegetation as it is under active agriculture. The vegetation along the margins of the stream channel was sometimes characterized by very dense and included willows, cottonwoods, and dense patches of cattails. Other areas supported little vegetation other than sparsely scattered mule fat or tamarisk.

ARROYO TOAD REPORT

L E G E N D

-  Southwestern Pond Turtle.
-  Arroyo Toad Survey Reach
-  Newhall Ranch Specific Plan Boundary



Relative Location

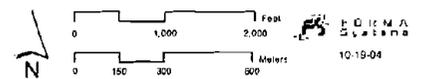


Figure 3
**SPECIAL-STATUS
SPECIES LOCATION**

As previously mentioned, three individual evening/nighttime site visits were made at a known occupied site north of Castaic Lake for the purpose of determining active calling periods, laying periods, and timing of metamorphosis. Site visits were conducted on April 7, April 20, and June 8. On April 7, several calling males were heard and three individual males were observed at the concrete crossing at the terminus of Templin Highway. None was heard or observed during the second visit though winds were relatively high and nighttime temperatures were cooler than usual for that month. During the third visit, there were also no indications of arroyo toad as the creek had stopped flowing and had dried with the exception of a few small pools. However, conversations with Mr. Chris Delith of FWS indicated that further downstream of the areas we visited, there were more pools and numerous arroyo toad tadpoles were observed during the same period of time we were in the area. Mr. Scott Cameron, who was concurrently surveying portions of the Santa Clara River east of the subject survey zones, conducted additional visits to the occupied sites north of Castaic Dam. This information, and the information received from Mr. Delith was useful in calculating if and when adults would be calling and when tadpoles would likely begin metamorphosing in the survey area if they were to be present.

DISCUSSION/CONCLUSIONS

Based on the results of the studies conducted by Compliance Biology, Inc. and from other surveys conducted in the vicinity over the past several years, it is appears that arroyo toads are absent in this portion of the Santa Clara River watershed. Though speculative, there are a number of possible explanations for their apparent absence. As most of the major arroyo toad studies have described in detail, there are a number of factors that contribute to the reduction of arroyo toad populations, and nearly all of these factors are present within the subject survey area.

Habitat destruction and alteration has been described by most experts as being the primary cause for the decline in arroyo toad numbers. Sweet (1992) identifies dams as being responsible for greatest amount of suitable arroyo toad habitat and cites a number of examples. The portion of river within the River Village project area is affected both directly and indirectly by dams and other sources of flow regulation. Castaic Dam occurs between two contemporary documented populations of arroyo toad (FWS 2001a), which suggests it may have eliminated a considerable amount of suitable habitat for this species, in particular those areas located downstream of the dam.

Water flows along the Santa Clara River in the River Village area during the survey period are largely attributable to the tertiary treated effluent releases from the WRP No. 32 and further upstream (adjacent

to Bouquet Canyon Road Bridge) from WRP No. 26. Fluctuating flow rates and water levels from WRP releases may also be a factor in affecting suitable breeding habitat in the river.

Non-native predators can also be a contributing factor to the reduction of arroyo toad in the region. This year numerous African clawed frog tadpoles, juveniles and adults were observed in pools adjacent to flowing channels. This predatory species appears to be increasing in number in the Santa Clara River watershed. African clawed frogs have been observed preying on various life stages of arroyo toad including eggs, larvae, and adults (Ramirez 2000). Non-native fishes feeding on larval and juvenile arroyo toad have also been recorded (Sweet 1992). Several predatory species of non-native fish are known from the Santa Clara River system. Though none was directly observed during the survey effort, it is likely they still occur and pose a threat to breeding toads.

Native predators also contribute to reduce numbers of arroyo toad in a given area. Two-striped garter snake and southwestern pond turtle are both known from the Santa Clara River within the River Village vicinity. Though declining in numbers themselves, when either of these two species encounters a breeding pool of arroyo toad tadpoles, they can significantly impact that population. Wading birds such as herons and egrets also have a potential to significantly impact tadpole populations.

Other land uses such as urbanization, agriculture, and mining can also contribute to the reduction of suitable habitat. Development reduces the amount of area available to locally occurring arroyo toads and factors such as increased human presence and non-native plants and animals, and alteration of water quality inevitably follow. Agriculture commonly includes regular tilling of soil and introduction of pesticides and herbicides, all contributing to the reduction of the amount of suitable habitat available to this species. Sand and gravel mining operations also directly impact river and streambeds and result in increased silt loads that can smother egg masses downstream.

A previous habitat evaluation revealed that the majority of suitable arroyo toad habitat present within the Newhall Ranch area occurs between the banks of the Santa Clara River (Impact Sciences 2002). Beyond the outer banks, both natural topography and human activities provide an inaccessible and/or inhospitable environment for any dispersing toads. It was also noted that much of the upland habitat beyond the banks of the stream may not have historically provided suitable over-wintering habitat for adult arroyo toad due to the arid conditions and lack of constituent elements that characterize high quality arroyo toad habitat. As such, it is possible that arroyo toad numbers were never high (if historically present) in this portion of the Santa Clara River.

In summary, no arroyo toads were recorded within the portion of the Santa Clara River watershed included in the River Village project area, however this taxon has been recorded in very low numbers upstream (east) of the survey reach covered in this report. Whether one surmises that the upstream population(s) are a remnant of a once much larger population, or individuals from surviving upstream populations that may have been displaced during storm events from previous years, it is apparent that they are not breeding in the subject area and currently do not utilize habitats present within the River Village project survey area.

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APPENDIX A
Survey Protocol for the Arroyo Toad

SURVEY PROTOCOL FOR THE ARROYO TOAD

May 19,1999

The following guidelines are provided to facilitate accurate assessments of the presence or absence of the federally listed endangered arroyo toad (*Bufo microscaphus californicus*). Accurate survey data are needed to provide the U.S. Fish and Wildlife Service (Service) with sufficient information to respond to requests for Federal permits and licenses. Currently, surveys performed in accordance with these guidelines will not require a permit under section 10(a)(1)(A) of the Endangered Species Act of 1973, as amended. However, permits to conduct arroyo toad surveys may be required in the future. In all cases, extreme care must be taken when conducting surveys to avoid inadvertently injuring or killing toads, or damaging their habitat. These guidelines are not meant to be used for long-term monitoring of projects or the overall status of populations; guidelines for such monitoring efforts should be developed with the assistance of the Service for specific cases.

The Service recommends that the following survey guidelines be used to determine if arroyo toads are present in the vicinity of proposed activities, but cautions that negative surveys during a year of severe weather (e.g., drought, extended rainy season, cold weather) may be inconclusive. Contact the appropriate field office (addresses and phone numbers below) before conducting surveys for additional information.

- 1) Areas within one kilometer (1 km) of arroyo toad sites (documented by the presence of eggs, larvae, juveniles, or adults) that have suitable habitat shall be presumed to have arroyo toads.
- 2) If the sole purpose of surveys is to determine the presence or absence of the arroyo toad, surveys shall cease immediately upon determination that arroyo toad eggs, larvae, juveniles, or adults are present in the survey area. The arroyo toad locations shall be recorded on a USGS 1:24,000 (7.5 minute) map
- 3) To be reasonably confident that arroyo toads are not present at a site, at least six (6) surveys must be conducted during the breeding season, which generally occurs from March 15 through July 1, with at least seven (7) days between surveys. Extreme weather conditions can cause variations in the breeding season; these conditions should be fully considered when developing a schedule of surveys. If uncertainty exists as to whether environmental conditions are suitable (see guideline #9 below), contact the appropriate field office for further information.
- 4) At least one survey shall be conducted per month during April, May, and June.
- 5) Surveys shall include both daytime and nighttime components conducted within the same 24-hour period (except when arroyo toads have been detected in the survey area).
- 6) Daytime surveys shall include an assessment and mapping of: a) arroyo toad habitat suitability, and b) the presence of arroyo toad eggs, larvae, or juveniles. Extreme caution must be used to avoid crushing arroyo toads that are burrowed into sand bars and banks, or lodged in depressions in the substrate (sand, gravel, soil). Arroyo toads will use trails and roads up to

several hundred meters from breeding sites while foraging; therefore, caution must be taken to not disturb, injure, or kill arroyo toads when using these roads and trails.

7) Daytime surveys shall be conducted by walking slowly along stream margins and in adjacent riparian habitat, visually searching for (but not disturbing) eggs, larvae, and juveniles. If necessary, surveyors may walk within the stream, taking care not to disturb or create silt deposits within breeding pools. If stream crossings are necessary, these should be on the downstream ends of potential breeding pools or in fast-flowing channels to minimize the likelihood of stirring up silt deposits. Arroyo toad eggs are usually laid in shallow water (less than four inches deep), and are susceptible to being smothered by silt that may be raised by walking in or across breeding pools.

8) Nighttime surveys (assuming eggs, larvae, and/or juveniles have not been detected) shall be conducted by walking slowly and carefully on stream banks. Surveyors should stop periodically and remain still and silent for approximately 15 minutes at appropriate sites to wait for arroyo toads to begin calling. The same cautions used for daytime surveys to avoid disturbing, injuring, or killing arroyo toads shall be incorporated.

9) Nighttime surveys must be conducted between one hour after dusk and midnight, when air temperature at dusk is 55 degrees Fahrenheit or greater. Surveys should not be conducted during nights when a full or near-full moon is illuminating the survey area or during adverse weather conditions such as rain, high winds, or flood flows.

10) Nighttime surveys must be conducted as silently as possible, because talking or other human-generated noises may cause arroyo toads to stop calling or leave the creek. Strong headlights or flashlights may be used to visually locate and identify adult arroyo toads, and flash photography may be used to document sightings of solitary individuals; otherwise lighting should be kept to a minimum.

11) Pairs of arroyo toads are very sensitive to disturbances, particularly waves or ripples (calling males are less easily disturbed). Therefore, surveyors must not enter the water near amplexing or courting pairs, and must immediately leave the vicinity upon their discovery.

12) A final report, to be submitted within 30 days of each field season or positive survey shall be prepared that includes survey dates and times, names of surveyor(s), air temperature, estimated wind speed, lighting conditions, a description of the survey methods used, and survey locations plotted on a USGS 1:24,000 (7.5 minute) map.

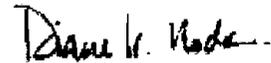
13) The results of a field survey may not be valid for any of the following reasons: a) surveys were conducted in a manner inconsistent with this protocol, b) surveys were incomplete, c) surveys were conducted during adverse conditions or during a season of severe weather conditions, or d) reporting requirements were not fulfilled. In such cases, the Service may request that additional surveys be conducted.

The final report should be provided to the appropriate Service field office:

For surveys in Monterey, San Luis Obispo, Santa Barbara, and Ventura Counties, Los Angeles County west of Highway 405, and the desert portions of Los Angeles and San Bernardino Counties, reports should be sent to the Ventura Fish and Wildlife Office, 2493 Portola Road, Suite B, Ventura, California 93003 (phone: (805) 644-1766).

For surveys in Los Angeles County east of Highway 405 and south of the desert, Orange, Riverside, Imperial, San Diego, and montane and cismontane San Bernardino Counties, reports should be sent to the Carlsbad Fish and Wildlife Office, 2730 Loker Avenue West, Carlsbad, California 92008 (phone: (760) 431-9440).

If a surveyor thinks that a specific project warrants alterations in this protocol, the Service should be contacted prior to the onset of surveys to discuss and possibly grant permission for proposed modifications. We would appreciate receiving any comments or ideas on these guidelines or recommendations for their improvement. For additional information, please contact the Ventura Fish and Wildlife Office at (805) 644-1766 or the Carlsbad Fish and Wildlife Office at (760) 431-9440.



Diane K. Noda
Field Supervisor